Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Petition To Adopt Service Rules for	)	
Unmanned Aircraft Systems ("UAS")	)	RM-11798
Command and Control in the	)	
5030-5091 MHz Band	)	

SUPPLEMENT TO PETITION FOR RULEMAKING

The Aerospace Industries Association ("AIA") hereby supplements its above-referenced Petition for Rulemaking,[1] to clarify some recommendations that it put forward to the Federal Communications Commission (the "Commission") in seeking a rulemaking to address technical and operational rules relating to use of the 5030-5091 MHz band (or "C-band") to enable secure Control and Non-Payload Communications ("CNPC") links to support safe unmanned aircraft operations in the United States.

AIA offers these clarifications following discussions with interested stakeholders, including representatives of CTIA and the Small UAV Coalition,[2] with whom AIA representatives have met to explore industry's mutual interests in fostering the development and deployment of a flexible regulatory framework that enables command and control ("C2") operations to support Unmanned Aircraft Systems ("UAS") operations. Overall, the stakeholders agree that such operations for the full range of UAS will ultimately be conducted not only in the subject C-band, but of necessity in other bands, such as commercial wireless bands over which 3G, 4G, and 5G services are or will be deployed. Accordingly, whatever framework for UAS C2

[1] Aerospace Industries Association, Petition for Rulemaking (submitted Feb. 8, 2018), RM-11798.
[2] CTIA and the Small UAV Coalition each have filed comments in the docket.

operations the FCC ultimately promulgates needs to be sufficiently flexible to support a wide variety of aircraft and missions, including utilizing non-aeronautical mobile (route) service spectrum.

AIA and its representatives remain committed to working both with the Commission and industry stakeholders to expeditiously progress enabling unmanned and autonomous aircraft deployment. AIA believes the subject Supplement will provide the Commission with a more refined understanding of the key issues related to the outstanding Petition, as it prepares to initiate a rulemaking proceeding.

I. SAFETY OF OPERATIONS IN THE NATIONAL AIRSPACE SYSTEM IS THE OVERALL OBJECTIVE

AIA believes that all industry stakeholders support the objective of ensuring that safety of the public and National Airspace System ("NAS") is not compromised. Indeed, the issuing of rules enabling C2 of unmanned aerial vehicles represents a significant step in ensuring and enhancing safety of the NAS. The fulfillment of this objective – with the attendant benefit of enabling normalized UAS operations at different altitudes and in a variety of airspace classifications – requires dedicated, reliable radio frequency links.

Based on AIA's discussions with multiple industry stakeholders, it seems clear that industry is broadly committed to realization of an operational environment that ensures safety remains at the forefront of operations in the NAS. Meanwhile, industry wishes to foster the development and implementation of a regulatory framework sufficiently flexible to maximize the utilization of the limited aviation safety C-band spectrum resources that are currently identified for CNPC link operations, as well as accommodating use of other spectrum bands identified in the future by the Commission for UAS communications. AIA believes a Commission

rulemaking aligned with the following elements will enable an operational framework that ensures such flexibility while engendering broad industry support for the outcomes.

A. Operations Utilizing C-band Spectrum Resources Should Not Be Limited to Class A Airspace Operations

Industry has identified a wide variety of potential operators, platforms, and use cases that may wish to access the 5030-5091 MHz band. The comments submitted in response to the Commission's Public Notice make this clear. Some parties however noted that the objectives of the AIA Petition on this point were ambiguous or even confusing. AIA thus clarifies that it does not intend for its Petition or the subsequent Commission proceeding to limit UAS operations to a particular airspace classification or use case.

The AIA Petition was in large part informed by the work of RTCA and especially RTCA's Special Committee 228, which manages a Working Group focusing on the development of standards for CNPC links in Class A and other controlled airspace operational settings. While the RTCA standards are and will be the basis for such operations in Class A airspace, AIA reinforces that users of the airspace generally, including those not contemplated by the RTCA work, might require access to the 5030-5091 MHz band to support CNPC operations and should be entitled to such access.

Accordingly, AIA suggests that the FCC observe a distinction in its forthcoming Notice of Proposed Rulemaking only to note that while certain equipage requirements are mandated in some airspace classifications, those requirements are not universally applicable to all operators seeking access to the subject spectrum band. Instead, operators of CNPC links in the C-band would be bound by relevant Federal Aviation Regulations ("FARs") as prescribed by the Federal Aviation Administration ("FAA") for their particular types of operations. From the perspective of any proposed rules by the Commission, eligibility to the band should not preclude any

operator, in any classification of airspace, insofar as those aircraft operations are conducted consistent with the relevant FARs and the aircraft is appropriately equipped to the level required for its own type of operations.

B. A Scalable Dynamic Frequency Assignment System Will Be Crucial to Satisfying Projected Requests for Access to Limited Spectrum Resources

The C-band spectrum resources dedicated to such CNPC operations are limited. AIA reasserts that a dynamic frequency assignment system will be crucial to maximize the number of operations that can be simultaneously supported at any one time, in a single geography, especially in more dense areas of the United States. AIA recognizes that the Commission has in other rulemaking contexts contemplated and advanced a variety of solutions to provide dynamic frequency assignment in lieu of the traditional frequency coordination mechanisms that often rely upon manual processes and require days to weeks of prior effort.

AIA urges the Commission to use this opportunity to leverage some of the lessons it has learned in other proceedings that address the need for real-time coordination mechanisms, to ensure similar efficiencies in the management of the 5030-5091 MHz band. Furthermore, AIA appreciates from its discussions with other UAS stakeholders that there may be yet other novel approaches to frequency management that should be contemplated to fulfill CNPC operations in the C-band. AIA looks forward to the opportunity to explore these possibilities with the Commission and with other UAS stakeholders, and it encourages that the forthcoming Notice of Proposed Rulemaking be dedicated to soliciting innovative solutions.

Any identified solution must be flexible and scalable to accommodate the introduction of additional spectrum bands for the provision of the same or similar service as they are made available. In addition, AIA envisages that the Commission will want to ensure that the frequency assignment mechanism, being not only scalable to account for the availability of additional bands

to provide CNPC capabilities, should also be technically capable of interoperability with other architectures that may be developed for the provision of frequency assignments to related technology services.

II. PART 87 IS CURRENTLY THE APPROPRIATE RULE SECTION FOR UNMANNED AIRCRAFT SYSTEMS CNPC LINKS IN THE C-BAND AS AN AVIATION SAFETY SERVICE

AIA has stated that Part 87 is the appropriate location for rules that enable CNPC operations in the C-band for UAS. While strictly an aviation service, AIA also recognizes that unmanned operations in the C-band will be in some ways distinct from the manned operations that are the subject of the current Part 87 rules. Accordingly, AIA believes the creation of a new Subpart under Part 87 that accounts for radio frequency command and control or safety-related communications with unmanned aircraft using the C-band is appropriate.

AIA is neither proposing that the C-band be the exclusive band for UAS C2, nor that all UAS C2 be conducted using safety of life spectrum, nor that all UAS communications be governed by Part 87. AIA recognizes that a variety of spectrum bands are suitable for providing communications links to UAS. Indeed, for some UAS applications it would be appropriate for operators to utilize non-aviation safety spectrum for C2 – and such operations should not be constrained by whatever rules are adopted in the C-band. The FCC has several options for addressing UAS use of additional licensed spectrum for CNPC, such as creating a new rule part entirely for radio frequency operations with unmanned platforms (including, potentially, terrestrial and maritime) that will require dedicated spectrum resources for C2 and perhaps even payload operations. For example, if commercial mobile services are capable of providing CNPC communications for UAS, then AIA would fully support that usage.

However, for the instant request for a Notice of Proposed Rulemaking, AIA strongly believes that only the aeronautical mobile (route) service is the appropriate service to provide aviation safety related communications in the 5030-5091 MHz frequency band. Moreover, only aviation-safety related communications should be permitted in the C-band. Because the C-band will not be the exclusive spectrum used for UAS C2, and because other spectrum will be available for non-aviation safety uses, there is simply no reason to dilute the C-band with other types of communications.

AIA welcomes the opportunity in the context of this proceeding and subsequent rulemakings to continue discussions with industry stakeholders on this issue, even as it maintains that Part 87 is currently the most appropriate rule location for such aviation-specific operations in the C-band.

III. THE COMMISSION MUST WORK WITH INDUSTRY TO IDENTIFY ADDITIONAL SPECTRUM RESOURCES FOR BOTH CNPC AND PAYLOAD OPERATIONS

AIA noted in its initial and reply comments in the docket that the C-band identified both by the Commission domestically and the International Telecommunication Union ("ITU") internationally for dedicated CNPC purposes is just one of many segments of contiguous spectrum that is necessary to ensure the safe operations of UAS in the NAS. Indeed, the limited amount of spectrum available in the C-band will hardly be adequate for even the most modest of projections for UAS deployment on a future basis. Furthermore, current allocations only address C2 operations and have not generally considered future bandwidth requirements for UAS payload operations.

AIA agrees with other industry stakeholders that now is the time to reinforce the process for identifying and securing access to additional radio frequency bands that can be utilized to

ensure the deployment of safe UAS operations in the NAS. AIA welcomes the opportunity to work both with industry and Federal stakeholders, and with the Commission, to create a comprehensive "roadmap" ensuring access to both current and future spectrum allocations for these critical operations. Such an effort, which no doubt will require additional new proceedings in addition to that requested by AIA in its Petition for Rulemaking, will be essential to advance technology development and ensure U.S. leadership in the aerospace transportation sector.

IV. CONCLUSION

On the basis of its initial Petition for Rulemaking and the subsequent comment activity in the docket, AIA urges the Commission to proceed expeditiously with the issuance of a Notice of Proposed Rulemaking to give shape to a much needed CNPC regulatory framework in the C-band that can scale appropriately to future operations. Doing so is in the interest of U.S. operators who wish to develop for and deploy radio operations in the C-band, and will also serve as a key milestone internationally to harmonize such operations across borders. AIA also looks forward to working with the Commission and industry stakeholders on separate regulatory activities to enable other spectrum allocations and users to provide data to UAS.

Respectfully submitted,

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